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Medical support of gut function in rabbits

Gut stasis is a commonly seen clinical sign in rabbit patients. This article discusses the physiological changes associated with gut stasis in rabbits, emphasising comprehensive treatment. The drugs commonly used are discussed, as are collateral treatments such as fluid therapy and supported feeding.

Key words: Rabbit, gut stasis, gastro-intestinal hypomotility, prokinetics

Introduction



Maintaining the functionality of the rabbit gut is the heart of rabbit medicine. Whether the gut itself is diseased or fac-

tors external to the gut are affecting the motility, retaining the rabbit's ability to keep the gut moving is key to the success of any treatment prescribed (Table 1).

The rabbit is a hind gut fermenter that has evolved a digestive system capable of extracting nutrition from fairly nutrient dilute feedstuffs. The gut forms a large proportion of both the abdominal volume and the body weight and is dependent on normal motility for normal digestion. As soon as the gut's motility is disordered (the gut itself is diseased or the rabbit is otherwise unwell) then the composition of the microflora rapidly changes, meaning that the ability to digest food is altered. Equally when the gut's motility is reduced it becomes very difficult for the retroperistaltic movement of digestible matter back towards the caecum for fermentation to occur, and ingesta that is potentially digestible is lost through defecation (often noted as diarrhoea). These two factors mean that when the gut is not moving normally, the rabbit patient can very rapidly experience significant third-spacing of fluid, electrolyte derangements, and negative energy balance. All these factors confound the good outcome of clinical cases if they are not comprehensively addressed. Gut stasis, regardless of cause, is a potentially life-threatening problem (Tables 2 & 3).

How to evaluate gut function clinically

It is critically important that the clinician is able to assess the gut function and recognise gut stasis accurately. Clinical examination, gut palpation, gut

auscultation and description of faeces are all important.

• **History taking:** important questions to ask include:

1. Confirm the signalment and vaccination status
2. Is the rabbit eating?
3. Has the dietary preference changed?
4. What food is being offered vs. what is actually being eaten?
5. How long has the issue been going on?
6. Have there been any other clinical signs e.g. polydipsia or exercise intolerance?

• **Clinical examination:** A full clinical examination should be performed with a view to discriminate between diseases of the gut and those external to the gut that can result in gut stasis. Particular attention should be paid to evaluation of hydration status.

• **Gut palpation:** The abdomen must be palpated systematically to allow evaluation of the abdominal organs and gut. In a normal rabbit, the caecum should be easily palpable and occupy around a third of the abdominal volume. The gut should feel full but not distended, doughy or painful. Guts that feel distended or empty are abnormal, as are discrete areas of pain (Figure 1).

• **Gut auscultation:** normal rabbit guts will contract every 30–45 seconds, however a rabbit that is stressed in a veterinary clinic may not exhibit gut motility on examination. It is worth spending sufficient time on gut auscultation, up to a minute on each side. Lack of gut sounds does not necessarily mean the rabbit is suffering from gut stasis. Gut sounds should be fairly uniform and quiet (not easily heard without a stethoscope). Loud



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Table 1: Diseases Affecting Gut Motility

Gastrointestinal diseases

- Coccidiosis
- Enteritis
- Enterotoxaemia
- Muroid enteropathy
- Intestinal lymphoma/other gut associated neoplasia

Non Gastrointestinal diseases

- Dental disease
- Skeletal pain from any cause
- Visceral pain from any cause
- Stress
- Respiratory disease (breathing instead of eating)

Table 2: The Effects of Stress on Rabbit Physiology

- Increased respiratory and heart rates due to adrenaline release
- Cortisol release leading to abnormal glucose metabolism, hyperglycaemia and hepatic lipidosis
- Anorexia and gut stasis
- Cardiomyopathy
- Lymphopaenia
- Reduced renal blood flow leading to oliguria
- Heart failure and death

tinkling sounds can indicate a gas fluid interface within the guts and are often associated with abdominal discomfort.

- **Faecal description:** it is very worthwhile getting an accurate description of the faeces that the rabbit is passing. A normal rabbit will produce around 150 faecal pellets every 24 hours, and will eat most or all of its caecotrophs directly from the anus. There are several important categories of abnormal faecal production to consider: (this list is not exhaustive)
 1. Normal faeces but fewer and smaller: suggests that food intake has been reduced but the gut is still working normally.
 2. Normal faeces but failing to eat caecotrophs (this is often mistaken for diarrhoea): change in taste

Table 3: Brief overview of rabbit gut function

How the rabbit gut works

- Food is ground up into smaller particles by the teeth.
- The stomach and small intestines function in a similar way to other species, with simple molecules such as sugars, starches and proteins being digested and absorbed.
- The food exits the small intestine through the ileocolic valve. This structure prevents reflux of colon contents back into the small intestine during retrograde peristalsis.
- Once the ingesta passes into the proximal colon the large indigestible particles are separated from the smaller potentially digestible particles due to the activity of the 'elevator-like' haustra in the proximal colon wall. The larger particles are sent towards the distal colon to produce the normal hard faeces, while the smaller ones are lifted back towards the caecum for fermentation.
- Periodically the caecal contents are released into the proximal colon, whose activity at this time is different, the haustral 'lifting' stops and the caecal material transits rapidly to the fusus coli, where it is formed into pellets and covered in mucus. The soft faeces phase of excretion ends in the production of caecotrophs that should be eaten directly from the anus.

Figure 1: Guide for palpation: illustration of abdominal contents

